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ABSTRACT

Phonics has been taught from the time of the ancient Greeks to make the written language more accessible. The first task of learning to read is learning to recognize in print the language used in speech. As a result of many studies conducted during the 1960s which demonstrated the effectiveness of phonics, its use as an instructional method increased during the 1970s. A synthesis of the research evidence of 1910 to 1965, an update to 1983, a review of recent research and theory, and evidence from the National Assessment of Educational Progress all point to the first importance of teaching children how to decode words. The research demonstrates the importance of awareness of how words are segmented into syllables and phonemes, and how they map to letters, word parts, and words. Schools of education and educational publishers should embrace "what works" and avoid programs based on shaky assumptions with little evidence of success. Furthermore, the federal government should support the development of tests that can disentangle different aspects of reading from one another, as part of a quest for the best instructional methods. Such tests can also help educators understand individual differences in reading at all levels. (Sixty-two references are attached.) (SG)

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The Role of Phonics in the Teaching of Reading: A Position Paper Prepared for the Secretary of Education

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This paper[1] presents my position on the role of phonics in teaching beginners how to read--whether the beginners are young children, young people, or adults who have not yet learned how to read. This position is based on my research, the research of others, as well as my nearly 40 years of teaching and clinical practice with children and adults with reading difficulties. Essentially, I will attempt to answer such questions as whether the teaching and learning of phonics facilitates learning to read, whether it helps prevent reading difficulties, and whether it benefits those who find learning to read difficult--those from low-income families, from minority groups, and those predicted to have learning disabilities.

Definitions and a Brief History

I should like, first, to make clear what I mean by the term "phonics." Phonics refers to that part of reading (and writing) that concerns the relationship between the sounds in spoken words and the letters used to represent them. In lay terms, it means learning letters and sounds and using these to identify words not immediately recognized. Other terms have been and are currently used to stand for about the same things as phonics, e.g., decoding, a code-emphasis, word analysis, phonemic awareness or analysis, the alphabetic principle. Essentially, all of these refer to the learning and use of letter/sound relationships for

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1 I should like to thank my doctoral students, Sara Brody and Linda Rath, for their assistance in the preparation of this paper.

recognizing words not immediately identified.

There are many ways to learn and teach phonics. As with other knowledge and skills taught in schools, some are more effective and interesting than others. In the debates on phonics, many people assume that learning phonics, per se, is dull. This is a misconception. From my observations of phonics teaching in hundreds of classrooms and reading laboratories, and from my own teaching of children and adults, I find it can be as intellectually challenging and interesting as other aspects of reading instruction. Indeed, the study of the regularities between letters and sounds in words has been the fascination of linguists and philologists for centuries and can be equally exciting to those first learning to read, as is the reading of text.

Phonics has been taught from the time of the ancient Greeks to the present to make the written language more accessible. It is a tool for helping beginners identify words accurately so that they can read text with comprehension earlier and more efficiently. Essentially, phonics is not taught for its own sake, but for the sake of learning to read.

The first task of learning to read (whether among children or adults) is to learn to recognize in print the considerable language they have when they listen and speak. Children of 6 already know about 6,000 words, and English-speaking illiterate adults probably know more words. The history of teaching reading has, from time to time, been characterized by different views as

to how to help beginners transfer their oral to their written language. Probably the oldest view in the United States is that spelling and phonics speed the process. The New England Primer, Webster's Blue Back Speller, and McGuffey's Readers all emphasized "phonics" as a beginning tool. In recent times (e.g., the period from 1920 to the late 1960s), the consensus in the U.S. was that the best way to learn to read was to start by reading whole words (at sight). Some even started with sentences and stories. This was done in order to focus on reading "for meaning" right from the start. Phonics was taught later and to be used only as a last resort in identifying words. The theory behind this was that since the ultimate goal of reading is to comprehend, starting with a "meaning-emphasis" would be more effective.

Dissatisfaction with the results of the sight method (meaning-emphasis) began to appear in the middle and late 1950s (Flesch, 1955; Terman and Walcutt, 1958) with calls for a return to phonics. In the 1960s, many research studies were undertaken to look into the phonics issue in beginning reading. Chall (1967) reviewed the existing research and theory on phonics, and Bond and Dykstra (1967) coordinated 27 cooperative studies of beginning reading methods. Both concluded that the evidence was stronger for the teaching of phonics. As a result of these and other studies, there was an increase in the teaching of phonics in the basal readers and in classrooms during the 1970s.

During the 1980s, there seems to have been a return to sight

or "meaning-emphasis" methods. Called by other names such as "whole language" or "literature based programs," "writing-reading programs" or "reading comprehension programs," they share one characteristic--first emphasis for the beginner on "reading for meaning" and a minor or negative position for phonics. At the present writing, the controversy has become as heated and emotional as it was in the 1960s. (See Carbo, 1988; Chall, 1989a).

What is the Evidence on Phonics?

The evidence which follows comes from many sources:

1. My synthesis of the research evidence of 1910 to 1965, published as Learning to Read: The Great Debate (1967).
2. My update of the research published from 1967 to 1983 (Learning to Read: The Great Debate, 1983).

This will include, also, a brief introduction to my Stages of Reading Development (1983) published at the same time as The Great Debate Update to give further insight into the influence of phonics in the overall development of reading.

3. A review of the most recent research and theory on phonics from many disciplines--cognitive psychology, child development, psycholinguistics, neurology, etc.
4. Evidence on the effectiveness of teaching phonics from the National Assessment of Educational Progress reading trends.

Learning to Read: The Great Debate (1967)

The study was conducted during the early 1960s, a time of heated debates on many aspects of beginning reading, particularly the role of phonics. Similar to today, there was a tendency to polarize issues, to overlook the best available evidence from the past, and to use language that was highly emotional.

The Great Debate was composed of several studies designed to answer the question of how best to teach beginning reading through a critical analysis of the available experimental research, a synthesis of the correlational studies of reading achievement (e.g., the relationship of knowledge of the alphabet and phonics to reading achievement), and an analysis of the clinical research on the effects of teaching phonics to those with reading difficulties.

I also interviewed the authors and editors of reading textbooks, leading proponents of the various methods, and observed these in schools. In addition, I analyzed the reading textbooks and teacher's manuals of leading reading series in the United States.

From these various analyses, I concluded that a code-emphasis (i.e., a stronger emphasis on the teaching of phonics) was more effective in general and particularly for children at risk.

I explained it as follows: a stronger phonics emphasis for beginning reading (code-emphasis) tends to result first in higher word recognition scores (at the beginning of grade 1) than a

weaker phonics emphasis (look-say, sight, meaning emphasis). With a stronger phonics beginning, reading comprehension may be the same or lower in the beginning of grade 1. However, at the end of grade 1 or by grade 2, the stronger phonics programs produce better results in both word recognition and comprehension. My hypothesis, thus, was that given time, phonics is advantageous both for word recognition and for reading comprehension--the ultimate goal of reading instruction. The advantage of phonics in beginning reading is in its facilitating word recognition and fluency, which in turn facilitates reading comprehension, which, in turn, opens the world of books earlier to the beginner.

My analysis of the literature on diagnosis and treatment of children with reading disabilities confirmed the experimental studies--most poor readers had extreme difficulty with decoding (phonics), not with comprehension. There was some evidence that the methods to which they had first been exposed, methods "that emphasized 'word,' 'natural,' or 'speeded' reading at the start and provided insufficient or inconsistent training in decoding produced more serious reading failures than one that emphasized the code." (Chall, 1967, p. 176).

The correlational studies also indicated the great importance of phonics for reading. At every level tested--from kindergarten through college--letter and phonics knowledge was positively associated with reading achievement.

More specifically, the correlational studies reported

consistently that knowing the names of the letters of the alphabet is the best predictor of early reading ability and that in the primary grades, letter and/or phonics knowledge has a higher correlation with reading achievement than mental ability or language measures.

Working from a theoretical base as well as from a synthesis of the experimental, correlational, and clinical findings of the research base, I recommended an earlier and more systematic phonics emphasis in beginning reading programs. Also recommended were changes to be made in the basal readers for more systematic teaching of phonics and for improved content by including more literature and harder reading matter. Furthermore, I recommended that library books rather than workbooks be used by children not working with the teacher and that writing be incorporated in the teaching of reading. (See Chall, 1967 and 1983a, pp. 307-313, for more detail.)

Changes in Reading During the 1970s

By 1977, ten years after the publication of *The Great Debate*, the amount of phonics included in most commercially published reading programs increased considerably. Most basal reading programs also introduced phonics earlier than they had in the 1960s. Heavier and earlier phonics programs also became the pattern that most of the major R & D centers followed for their beginning reading programs (Chall, 1977). (See also Popp, 1975.)

The Great Debate also had an impact on *Sesame Street* and *The*

Electric Company. Both of these TV shows, produced by Children's Television Workshop, after much discussion and deliberation by advisory committees, accepted decoding as a major focus for pre-reading (Sesame Street) and teaching beginning reading (The Electric Company). Millions of preschoolers and children in the primary grades learned the names of the letters, the relation of letters to sounds, and how they are combined to form words. The popularity of these shows (about 7 million watched Sesame Street and about 5 million The Electric Company) and their wide use in schools (particularly The Electric Company) helped, in turn, to legitimize the teaching of letters and sounds among parents and teachers.

The 1983 Update

Soon after the publication of The Great Debate, people began to ask whether my conclusions had remained the same, particularly in the light of new studies published after 1967. I published updates in Instructor (1974), in a Phi Delta Kappan Fastback (1977), and in a research volume on early reading (Chall, 1979). The Great Debate Update (1983), based on the research evidence from 1967 to 1981, was the most complete to that time and covered the research during the years 1967 to 1983, which was relatively more extensive than that found for the years 1910 to 1965. The Update also included more studies of "at risk" children and was conducted in a wide variety of settings by researchers from many

disciplines. The research carried on in classrooms,[2] laboratories, and clinics often used larger numbers of subjects and used more sophisticated research designs and statistical analyses than those published from 1910 to 1965.

Overall, the findings from the research from 1967 to 1983 confirmed those in the earlier study--stronger phonics programs for beginning readers produced better results than programs with a weaker phonics emphasis. In addition, it was possible to compare effectiveness of two different kinds of phonics--a "direct/synthetic" approach with an "indirect/analytic" approach. In a direct/synthetic approach, letter-sound relations are taught directly, and instruction is given in blending the separate sounds learned. In indirect/analytic approaches, sounds are analyzed from words and inferred from larger units. These comparisons indicated that direct/synthetic phonics tended to be more effective than indirect/analytic phonics.

The correlational studies conducted from 1967 to 1983 continued to find high associations of alphabet knowledge (in kindergarten and beginning of first grade) with reading achievement at the end of grade 1 (Bond & Dykstra, 1967; Jansky & deHirsch, 1972).

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2 These included the U.S. Office of Education's large scale comparisons of different beginning reading methods--the 27 USOE Cooperative First Grade Studies (Bond & Dykstra, 1967). Although there were different interpretations of the findings, the coordinators of the study concluded that, overall, the programs that had stronger phonics produced best results.

Recent Theory and Research on Phonics and Reading

It should be noted that the experimental studies often appeared to yield conflicting results if they were analyzed without reference to reading development. Indeed, the classroom comparisons made sense only when organized into a developmental scheme (by age/grade) and divided into the individual components of the reading process: word recognition, oral reading, silent reading comprehension, word meaning, etc. See in this connection my Stages of Reading Development (1983). In both the original and update of The Great Debate and in the Stages, I viewed reading as a complex cognitive process that changes as it develops through a hierarchy of stages. In the earliest stage (preschool) the reader reacts globally to print. In grade 1 the reader shifts to focusing on the print and on figuring out how the written code represents language. Once the skill of "decoding" (phonics) is mastered, the learner is able to focus on "reading to learn." For more detail on these stages and on the theoretical underpinnings of a developmental theory of learning to read, see Chall, 1979 and 1983b.

This developmental stage theory is very much in line with the theories of other cognitive psychologists: Piaget, Bruner, and more recent skill theorists. All propose similar models to explain the organizational structure of behavior: a skill is learned when simpler tasks are practiced until they become automatic so they can then be combined to support attempts at more complex tasks. Cognitive skill theorists emphasize the

importance of training and reinforcement from the environment through the stages of development. (See Piaget, 1983; Bruner, 1973; Case & Khanna, 1981; Fischer, 1980.)

Developmental reading theories (The Great Debate, 1967 and 1983, and Stages of Reading Development, 1983) propose that accurate word identification is the foundation of competent reading skill, i.e., reading comprehension, the goal of reading. There is also agreement that word identification should become as efficient as possible, as early as possible--automatic in fact--so as to free up cognitive resources for allocation to higher-level processes required for comprehension of text. (For more on the subject of reading as a cognitive process see Perfetti & Hogaboam, 1975; LaBerge & Samuels, 1976; Perfetti, 1985; Stanovich, 1986.)

For beginning readers, then, it is essential that words get recognized quickly and accurately. And this result is produced by an early instructional emphasis on learning phonics systematically. This was confirmed by one of the coordinators of the USOE First grade studies:

> We can summarize the results of sixty years of research dealing with beginning reading instruction by stating that early systematic instruction in phonics provides the child with the skills necessary to become an independent reader at an earlier age than is likely if phonics instruction is delayed and less systematic. (Dykstra, 1974, p. 397)

In Becoming a Nation of Readers (Anderson, Hiebert, Scott, & Wilkinson, 1985), the National Academy of Education Commission on Reading wrote:

> The question, then, is how should children be taught to read words? The answer given by most reading educators today is that phonics instruction is one of the essential ingredients. (p. 36)

Similar statements about the proven importance of phonics in facilitating accurate word identification can be found in What Works (Finn, 1986):

> Children get a better start in reading if they are taught phonics. Learning phonics helps them to understand the relationship between letters and sounds and to "break the code" that links the words they hear with the words they see in print. (p. 21)

The most recent overview of research on beginning reading and phonics, commissioned by the Reading Research and Education Center at the University of Illinois, by Marilyn Adams of Bolt, Beranek and Newman (1989), comes to essentially the same conclusion:

> The major conclusions of the program comparison studies are based on masses of data, gathered through formal experimental procedures, and scrutinized through relatively sophisticated statistical techniques. Yet, they are--point for point--virtually identical to those at which Jeanne Chall had arrived on the basis of her classroom observations and interpretive reviews of the literature. (p. 59)

The same conclusion is reached by Feitelson (1988) from a review of cross-cultural studies of phonics.

Research and Theory from Other Disciplines: Psycholinguistics and Cognitive Psychology

Recently, psycholinguists have offered explanations of what seems to be at the root of learning to read. Though at age 6 most children are competent at "making meaning," they must learn

how to decode the printed symbols. They are so focused on the meanings of words that they have not paid enough attention to word forms and therefore do not notice how individual sounds (phonemes) are combined to form words. They are unaware of sound patterns, rhymes, alliteration, and the like. They lack the "linguistic awareness" that enables them to separate the form and sound of a word from its meaning. This is why the human species, while biologically programmed to speak, must nevertheless be taught to read. Attending to language forms, patterns, and often-elusive phonemes is not a natural process, at least at this point in our evolution. See, in this regard, Morais, Cary, Alegria, & Bertelson, 1979.

Much work has been done to characterize the specific awarenesses that the learner must acquire if reading skill is to be mastered. (See in this connection Mattingly, 1972, for a description of linguistic or phonemic awareness, as well as Read, 1971; Bissex, 1980; Mason, 1980; Clay, 1982; Ferreiro, 1986.)

Experimental evidence by psychologists of reading on the importance of phonological awareness for success in learning to read go back to at least the 1930s. (See Monroe, 1932, and Chall, Roswell, & Blumenthal, 1963, for the high association of auditory blending and learning to read.) Recent research by psycholinguists confirms the early findings that a child's ability to perform phonemic segmentation and auditory blending is a highly reliable predictor of reading achievement. Ability to segment and blend words is regularly associated with as much as

65 to 80 percent of the variation in performance on tests of word recognition. It is a stronger predictor of reading ability than IQ, SES, and other measures of language or cognitive ability. (See, for example, Chall, 1967; Liberman & Shankweiler, 1979; Treiman & Baron, 1981; Zifcak, 1981; Stanovich, Cunningham, & Cramer, 1984; Tunmer & Nesdale, 1985; Berninger, 1986; Juel, Griffith, & Gough, 1986; Richgels, 1986; Mann, Tobin, & Wilson, 1987; Perfetti, Beck, Bell, & Hughes, 1987.)

An excellent synthesis of the research from the early part of the decade is provided by Joanna Williams (1984). More recent advances have been presented in a special issue of The Merrill-Palmer Quarterly (July 1987) and Intimacy with Language (1987), a publication containing papers from a conference on dyslexia sponsored by the Orton Society. One of the most recent experimental studies found that among second and third graders, 84 percent of the variation in comprehension achievement was accounted for by a combination of measures of phonemic awareness and decoding strategies (Freebody & Byrne, 1988).

Investigators have further demonstrated that the relationship is a causal one, that difficulties with phonological tasks result in difficulties in learning to read and that phonemic training can affect positively progress in learning to read. (See in this connection Elkonin, 1973; Wallach & Wallach, 1979; Williams, 1979a; Bradley, 1987; Lundberg, 1987.) These studies show that children of kindergarten age (as well as older non-readers) can be taught to hear and manipulate individual

phonemes in words and that this training improves their ability to decode words, recognize them, and read them in context with meaning. Moreover, the phonological awareness/reading relationship is a reciprocal one; growth in phonology advances reading achievement, and reading practice refines and facilitates phonology (Ehri, 1987).

Implications and Applications

In sum, the recent theory and research from psycholinguistics and cognitive psychology add further evidence for code-emphasis beginning reading instruction (systematic phonics, decoding) to the research of 1910 to 1983. All point to the first importance of teaching children how to decode words. The old and new research also provides evidence on the importance of teaching children to be aware of how spoken words are segmented into syllables and phonemes and how they map to letters, word parts, and words. This, too, points to the importance of explicit training in these phonemic abilities since they do not generally develop naturally.

Phonics and Adult Literacy

A longtime educational concern, and a very recent one, is the question of how best to teach reading to illiterate adults. Do the findings from the research on children hold for adult illiterates as well?

In a study of the phonic knowledge and skills of adult

illiterates, Read and Ruyter (1985) found that those adults who did not progress beyond a fourth grade reading level lacked phonemic knowledge--how to segment or blend parts of words.

Thus it would appear that adult beginners, as most other beginners, have instructional needs in phonics and decoding.

The National Assessment of Educational Progress: Do Instructional Emphases Make a Difference in NAEP Reading Scores?

For the past decade, I have been studying the trends in the National Assessment reading scores and how they relate to changes in reading instruction. (See Chall, 1983c, 1986a, 1986b, 1989b.)

Overall, my findings suggest the hypothesis that early reading programs that teach phonics systematically and that are also challenging (not too easy or too hard) produce better reading scores at age 9 and that these improved scores tend to be maintained when the cohort reaches ages 13 and 17. Also important are federal and community supports such as Head Start; diagnostic and remedial services for children with learning disabilities; the reading shows *Sesame Street* and *The Electric Company*, which included teaching of letters and sounds; and support of libraries; etc.

This would explain, in part, the significantly higher scores of the 9- and 13-year-olds in 1980 as compared to 1970. The 9- and 13-year-old children tested in 1980 probably had benefited from the stronger beginning reading programs and the stronger community supports (Head Start and Chapter 1, remedial

treatment). This is in contrast to those tested in 1970 who scored lower. They had received beginning reading instruction in the 1960s that focused on "reading for meaning" right from the start, with less emphasis on phonics.

Beginning with the 1984 NAEP, the scores for 9-year-olds began to taper (although scores for 13- and 17-year-olds increased as a result, I hypothesize, of their stronger reading programs in the early grades), and the scores in 1986 dropped precipitously. (See Chall, 1989b.)

To summarize, although the 1986 decline may stem from changes in testing procedures, we cannot overlook the probability that the declines are also related to the changes in beginning reading instruction from the late 1970s and the 1980s. These changes included an increase in the emphasis on reading comprehension from the first grade on, stemming from the growing interest, since the late 1970s, in research on comprehension. It should be noted that although the comprehension research was conducted mainly on students in grades 4 and above, the findings were applied also, questionably, to the primary grades. This can be seen when the primary grade basal readers published in the 1980s are compared with those published in the 1970s. Those published in 1980 emphasize reading comprehension more and phonics less (Neill, 1987; Meyer, Hastings, & Linn, 1988).

Thus, the basal readers of the 1980s resemble more the "meaning-emphasis" programs of the 1950s and 1960s which the accumulated research from 1910 to the present has found to be

less effective than the stronger word recognition and decoding programs of the 1970s. It is noteworthy that the decline in 1986 NAEP scores was greatest at the lower end of the distribution. This, too, fits the research from the laboratory, classroom, and clinic reported earlier--that strong code-emphasis programs (systematic, direct phonics; early preparation in phonemic awareness, early alphabet knowledge), while beneficial for all beginners, are particularly beneficial for those at risk.

Calls for meaning-emphasis beginning reading programs with less phonics come also from those who favor such approaches as "whole language," "emergent literacy," and "literature-based reading programs." (See Carbo, 1988.) While there may be differences in what these mean to the different proponents, they tend to share the theoretical position that learning to read is "natural," as natural as learning to speak, and that instruction in the forms and sounds of words is counter-indicated since it takes the child away from the major task of reading--to understand what is read. They further claim that the alphabetic principle is best learned as a by-product of "reading for meaning." It should be noted that the rhetoric and practices resemble the beginning reading "meaning-emphasis" programs of the years 1920 through the 1960s--programs that the research and theory from 1910 to the present have found less effective than code-emphasis programs used in the 1970s.

Conclusions and Recommendations

Research and theory from various disciplines, from 1910 to the present, all lead to the importance of early learning of the alphabetic principle to facilitate learning to read--for children and adults and particularly for those at risk--low SES, minorities, and those with reading and learning disabilities. Analyses of trends in national surveys (particularly on the NAEP) confirm the research and theory--that is, those first learning to read learn better and achieve higher levels (in the same instructional time) when they are taught to recognize words using the alphabetic principle (phonics, decoding, etc.).

Why, then, with so much supporting evidence, has there been a reluctance to accept these findings? Why, now, when we have such clear evidence from NAEP that the U.S. is doing so poorly in reading, are so many going against the best evidence?

It may well be that those who learned to read without systematic phonics (those who were in the primary grades during the 1930s, 40s, and 50s) are unsure about how it works and are therefore happy to drop it. It is always easier and more comfortable to teach as one learned. Having learned by a meaning-emphasis approach, they may feel more comfortable teaching that way. Indeed, there is considerable evidence that phonics is often taught incorrectly by teachers who have not themselves learned phonics and who had not received instruction in the teaching of phonics in their college preparatory classes. Others may overdo phonics instruction, leaving little time for

the reading of stories and other connected texts, or they may not teach it at all, relying instead on the children's learning phonics on their own from workbooks.

We may look also to other factors outside the scientific evidence. Joanna Williams (1979b) noted that a meaning-emphasis as compared to a code-emphasis may be more theoretically attractive, that viewing beginning reading as comprehension is seen by many as "sophisticated," while a code-emphasis, or decoding, is seen (erroneously) as "simple-minded."

Stanovich also considers non-scientific factors, noting that

> until recently the negative attitude toward word recognition was so strong that an investigator who chose to study a variable related to word recognition was often accused of denying that the goal of reading was comprehension. It has been common for articles on reading education to be cited and to become well known more because of their polemical content and writing style than because of their scientific merit. (Stanovich, 1987)

In the first edition of The Great Debate I noted that there was a tendency for those professing progressive and child-centered education to prefer a meaning-emphasis, viewing it as more open, more natural, and more self-directed. A code-emphasis, on the other hand, has been associated, erroneously, with traditional education and "dull drill." Indeed, both meaning- and code-emphases can be dull or interesting, depending upon how they are taught. (See in this connection the classroom observations in Chall, 1967, pp. 267-287.) It is further assumed by many that "open," "natural" reading programs, ones that do not teach skills directly, lead to greater cognitive development and

to greater love of reading and to lifetime reading. There is little evidence to support these claims. The limited evidence seems to indicate the opposite, particularly for children in the early grades and for those at risk (Stanovich, 1986). Indeed, systematic, direct instruction in phonics, since it tends to produce better readers and fewer reading problems, has probably produced more lifetime readers than meaning-emphasis approaches.

It has become increasingly common among some proponents of whole language and literature-based programs to assume that if one teaches phonics, one cannot be concerned with the cognitive, meaningful, creative, and joyful aspects of literacy. Unfortunately, many who are pro-literature, pro-writing, and pro-thinking seem to imply that those who teach phonics and decoding oppose these obviously excellent procedures. The history of reading instruction teaches us that literature, writing, and thinking are not exclusive properties of any one approach to beginning reading. The teaching of phonics has been successfully taught with literature and writing--indeed it enhances both. And thinking and problem-solving are a part of learning phonics as they are of comprehending stories.

Indeed, the change in the early 1970s to an earlier and more systematic teaching of phonics made it possible for the basal reading programs to use harder stories and literature of a higher quality at earlier levels than the meaning-emphasis basals of the 1950s and 1960s. This was possible because the stronger phonics emphasis made it possible for the children to read on a higher

level earlier.

The same is true for writing. A code-emphasis leads to earlier rather than later success in writing. Those children who know the letters of the alphabet write earlier (Read, 1971). Also, early readers who know phonics use it for writing and for reading (Bissex, 1980).

Some meaning first proponents recommend that phonics be taught only "as needed." (See Carbo, 1988.) To say that teachers should teach phonics only as needed is putting a greater burden of responsibility on teachers and children than theory, research, and practice support. An "as needed" policy puts an even greater risk on those children who need the instruction most--low-income, minority, and learning disabled children.

Overall, research evidence does not support meaning-emphasis approaches over code-emphasis approaches for beginning reading, even though the former are often couched in a rhetoric of warmth, openness, and great promise.

In times of desperation, in education as in national and world affairs, history has taught us that we have a tendency to look for global, charismatic, single solutions to very serious problems. Only after these fail, and at great costs, are we prepared to look for solutions that are more reality-based. A code-emphasis for beginning reading (phonics, decoding, and word recognition) is one way to help us improve the reading of our children and to help prevent reading problems, particularly among children at risk. It will not cure all learning problems among

all students. But the research evidence, as well as theory and practice, show that direct instruction in phonics improves reading achievement significantly. If we add to it what we also know from other research on reading--the importance of early exposure to print and books, reading to children and exposing them to the reading of many books of literature and information, using instructional materials that are not too easy or too hard, providing instruction in vocabulary and comprehension as students' reading develops, and providing practice in writing and reading in all curriculum areas--we can turn around the reading achievement of our students significantly.

My recommendation is that we provide reading instruction that reflects what we have learned about the reading process and about what methods are most effective from scientific investigations. I recommend, therefore, that we present teachers and administrators with the evidence that has emerged since 1910 on the use of phonics. Through workshops, sabbaticals, and in-service courses, educators must be introduced to the tools of phonics and encouraged to explore the literature that substantiates their effectiveness. It is clear that teacher training needs to become a national priority. Schools of education must promote sensible efforts to embrace "what works" and avoid programs that are based on shaky assumptions and little or no evidence of success. Educational publishers must also be encouraged to incorporate the tested-and-proven ideas into their reading programs. The effects of instructional materials on

teaching and learning are too strong to permit publishers to produce materials that are counter to research-based standards. Of course, if teachers and school systems demand programs that are consistent with research evidence, the educational publishers will be encouraged to look to the research as well as to the "market."

The matter of tests and what they can contribute to our knowledge about the reading process and reading instruction needs to be reconsidered. There are groups today who are opposed to tests. If tests are not used in follow-ups, it will be hard to know how the programs work. Many reading tests, including the National Assessment, give only one global score--reading comprehension. It is then difficult to know whether the problem is perhaps decoding, word meaning, comprehension, or all of these. It would be well for the federal government to support the development of tests that can disentangle the different aspects of reading from one another, which would help us in the quest for best methods. Such tests can also help us understand individual differences in reading at all levels.

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